Talking Points
IPCC Summary for Policymakers:
Climate Change 2007: The Physical Science Basis

Background

- The Summary for Policymakers of the first volume of the Intergovernmental Panel on Climate Change's (IPCC) new fourth assessment report "Climate Change 2007: The Physical Science Basis" was released on 2 February. The full report will be made available in mid-2007.
- The Summary for Policymakers summarizes the current state of climate science research. It does not cover the impacts of climate change on human health and the environment or options for the mitigation of climate change. These aspects will be covered in subsequent IPCC volumes to be finalized respectively in early April and May.
- Official government delegations, including from the U.S., met in Paris 29 January - 1 February to approve the Summary for Policymakers. The U.S. delegation to the IPCC included climate science experts from NASA, NOAA and the State Department.

U.S. Involvement

- The US government was a significant contributor to this report, with scientists serving as lead and review authors and providing comments in the official government review process.
    - A NOAA scientist, Dr. Susan Solomon, co-chaired IPCC Working Group 1; in addition, several NOAA scientists served as authors and reviewers and NOAA's Geophysical Fluid Dynamics Laboratory contributed modeling analyses
    - EPA staff were not authors, but did participate in review of the report
- Since 2002, the Administration has spent approximately $9 billion on climate change science research through the multi-agency Climate Change Science Program. These investments, along with input from U.S. scientists led to the development of key research results summarized in the IPCC report.

Key Talking Points on IPCC Findings

- Warming of the climate system is now "unequivocal." Compared to earlier assessments, considerable progress has been made in understanding how the climate is changing due to:
    - Improvements and extensions of numerous datasets and data analyses
    - Broader geographical coverage
    - A wider variety of measurements
    - Better understanding of uncertainties
- There is now increased confidence that human activities have caused most of the warming of the last 50 years. The report assigns greater than 90% certainty to this statement (compared to 66-90% certainty in the last report published in 2001).
- The report conveys greater confidence in future climate change projections due to improvements in climate modeling.
- U.S. government officials have endorsed the report, describing it as a comprehensive summary of current climate change science and a valuable resource.

Critiques of the IPCC Report

1. **Sea Level Rise:** The Report's projected sea level rise range of 0.18-0.59m is a decrease from 2001 projection of 0.09-0.88m (for the upper range). But:
    - The range includes projections for increased precipitation over Antarctica and Greenland (which decreases its contribution to sea level rise) but not the increased ice discharge from these ice sheets which are currently contributing to sea level rise.
    - If current sea ice contribution grows linearly with temperature change, the upper range of sea level rise projections would increase by 0.1 to 0.2m.

    Some sea level experts believe the IPCC is understating the risk of sea level rise given insufficient understanding of ice sheet processes and current observed trends.

2. **Intensity of Tropical Cyclones**: The IPCC concluded that it is "more likely than not" that human activities are linked to recent observed increases in tropical cyclone intensity. The attribution is based on expert judgment rather than formal studies. The rationale for this statement was:
    - Observational studies show a trend towards more intense tropical cyclones in some regions since 1970.
    - Sea surface temperatures have risen in tropical cyclone development regions, and attribution studies conclude the increase in temperatures cannot be explained by natural variability alone.

    Tropical cyclone experts generally feel the IPCC statement successfully reflects the actual balance of opinion(s) on the issue.

Key Findings – More Details

- Greenhouse concentrations have increased markedly due to human activities since 1750 and are presently the highest they've been in many thousands of years.
- Carbon dioxide (CO_2) is having the largest heating effect, followed by methane (CH_4).
- Warming of the climate system is unequivocal, as is now evident from:
    - observations of increases in global average air and ocean temperatures
    - widespread melting of snow and ice
    - rising global average sea level
- Average Northern Hemisphere temperatures are likely the highest in at least the past 1300 years.
- Human activities have very likely caused most of the warming of the last 50 years.
- Continued greenhouse gas emissions (at or above current rates) would cause warming and many additional climate changes, very likely larger than changes observed during the 20th century.
- Best estimate for temperature change in 2090-2099 relative to 1980-1999 is 1.8 to 4ºC considering a range of future emission pathways .
- Sea levels are projected to rise 0.18-0.59m. This estimate may be conservative given the considerable uncertainties about future contributions to sea level rise from the Greenland and Antarctic Ice.
- It is likely future tropical cyclones (typhoons and hurricanes) will become more intense, with larger peak wind speeds and heavier precipitation. There is less confidence in projections for a decrease in the number of tropical cyclones.
- It is very likely that hot extremes, heat waves, and heavy precipitation events will continue to become more frequent.
- Reductions in snow cover and sea ice are projected. In some projections, Arctic late-summer sea ice disappears almost entirely by the latter part of the 21st century.